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A REVIEW OF MAJOR DEVELOPMENTS IN THE WORLD ZINC MARKET IN THE 1990S

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SUMMARY AND CONCLUSIONS

1. Zinc demand achieved substantial growth in the 1980s. This was sustained partly by progress in technology and metallurgy science, leading to the development of applications of zinc such as in galvanizing and coating, and partly by the expansion of zinc consumption in developing countries, especially in eastern and south-eastern Asia.

2. However, the zinc market has weakened recently owing mainly to the recession affecting industry, the abundance of zinc supply, large accumulated stocks and increased exports from China and the countries of eastern Europe.

3. Despite sluggish performance of major world economies, world consumption of refined zinc managed a modest recovery in 1993, rising to an estimated 6,648 thousand metric tons, up 1.2 per cent following the drop of 2.2 per cent in 1992. This increase was largely owing to increased consumption in developing countries. By country, the largest consumer of zinc remains the United States followed by Japan and China. The latter country has also emerged recently as the third largest producing country behind Canada and Australia.

4. World zinc production continued its expansion in 1993, originating mainly from developing countries and China. World production of refined zinc rose to a peak estimated at 7,106 thousand metric tons, up by 3.2 per cent further to the increase of 0.6 per cent in 1992 and 2.3 per cent in 1991.

5. Following successive increases between 1989 and 1991, and relative stagnation in 1992, world mine production was down by 5.4 per cent, to an estimated 6,837 thousand metric tons in 1993, owing mainly to production cutbacks in some major developed market-economy producing countries. The larger proportion of zinc ore is processed into zinc metal in developed market-economy countries. However, as domestic and regional markets expand, the potential for expansion of both mining and smelting capacities remains substantial in developing countries and China.

6. Recovery of secondary zinc (recycled scrap) amounted to 1,882 thousand metric tons in 1993, down by 0.7 per cent for the first time following successive increases since 1985. Most of the scrap is recovered in the form of remelted zinc and direct use of secondary materials. Owing to high costs, no significant progress has been made in the recycling of scrap in the form of refined zinc. Prospects for future expansion of scrap recycling seem limited.

7. Increased zinc production has been accompanied by an increase of material held in stock, including both London Metal Exchange (LME) and country stocks. Total LME and country stocks rose by 49.3 per cent in 1993 to reach a total of 1,448 thousand metric tons. There was a further increase in the first eight months of 1994 which brought LME and country stocks up to 1,723 thousand metric tons at the end of August 1994. LME stocks have accumulated at particularly fast rates in recent years, rising from less than 55 thousand metric tons at the end of 1990 to 907 thousand metric tons by year-end 1993 then 1,234 thousand metric tons by the end of August 1994.

8. International trade in zinc material (both zinc metal and zinc ore) has expanded for most of the recent years. In 1993, world imports and exports of zinc metal (including zinc alloys) rose by 10.5 per cent and 9.4 per cent, respectively, to 2,868 thousand metric tons and 2,917 metric tons, respectively. As for zinc ore, world imports and exports declined by 16.6 per cent and 9.3 per

cent, respectively, to 2,964 thousand metric tons and 3,028 thousand metric tons (metal content), respectively. As a group, in 1993 developing countries were a net importer of zinc metal, including alloys (481 thousand metric tons), but a net exporter of zinc ore (507 thousand metric tons of net exports). There is also a higher degree of supply concentration in zinc ore exports than in zinc metal exports with the five largest zinc ore exporting countries (Australia, Canada, Peru, United States of America, and Ireland) accounting for around three-quarters of world zinc ore exports while the five largest zinc metal exporting countries (Canada, Australia, Belgium/Luxembourg, Spain, and China) accounted for less than half (48 per cent in 1993) of world total exports.

9. Major recent developments in international trade include an increased proportion of ore for cross-border smelting and an upsurge of exports of refined zinc from China and the countries of Eastern Europe. Cross-border smelting has increased the re-export of zinc material. As regards exports of refined zinc from China and the countries of Eastern Europe, shipments rose from 85 thousand metric tons in 1992 to 206 thousand metric tons in 1993 for the former, and from 176 thousand metric tons in 1992 to 264 thousand metric tons in 1993 for the latter.

10. In the 1980s, zinc prices had shown a relatively favourable performance compared with some other minerals and metals. Between 1986 and 1989, the annual average of the London Metal Exchange (LME) price of refined zinc rose at a rate of 34.0 per cent per annum to reach a record of $US 1,713 per metric ton. After 1989, price conditions deteriorated while price instability increased. Except in 1992, zinc prices have been in decline since the beginning of the 1990s, bringing down LME prices to an average of $US 964 per metric ton, in 1993. Although zinc prices have remained weak, the decline has slowed down and an upturn seems to have taken place more recently. LME prices averaged $US 971 per metric ton in the first ten months of 1994.

11. The short-term outlook is for the recent slow recovery in zinc consumption to gather strength as industrial activity continues to recover from the 1992-1993 recession. The improved economic conditions accompanied by rising consumer spending and capital investment will benefit zinc demand, particularly in the transportation and construction industries. However, the abundance of material including imports from China and the countries of Eastern Europe and stockpile releases by the United States, along with the large amounts of material held in stock, particularly the large LME stocks, will limit any substantial recovery in the zinc market, at least in the immediate future.

12. Although in the longer term, zinc demand is expected to resume higher growth rates than during the past few years, prospects for such growth would probably vary greatly by country. Zinc demand in developed market-economy countries should grow but at reduced rates if their rates of economic growth were to slow down as expected by recent long-term projections. In contrast, zinc demand is expected to continue to grow at higher rates in developing countries and China. Furthermore, the decline in zinc consumption experienced by the transition economies of Eastern Europe would eventually come to an end and begin to stabilise if not reverse. Despite some periodic setbacks, the longer-term zinc demand points to continued growth which will foster the further expansion of the zinc industry.

I. DEVELOPMENTS IN DEMAND

13. In the 1980s, zinc demand benefited from a number of favourable factors.

This includes: the expansion of applications for zinc in industry, such as in galvanizing and in the uses of zinc alloys and zinc oxide; and the rapid expansion of zinc demand in developing countries, particularly countries of Eastern and South-Eastern Asia. These developments boosted zinc demand despite deteriorating economic conditions in the 1980s compared with the 1970s.[1]

14. Zinc demand has, however, been subdued by the recent recession, particularly in 1992, which has seriously afflicted world industry including major zinc-consuming sectors such as construction and transportation. In 1993, world consumption of refined zinc (zinc slabs) managed a modest recovery of 1.2 per cent to reach an estimated total of 6,648 thousand metric tons, compared to a fall of 2.2 per cent in 1992 (annex I). Despite the recovery, the market has yet to recover from recent falls due largely to the collapse of demand in countries of Eastern Europe. The largest consumers of zinc are the United States, followed by Japan, China, Germany, the Commonwealth of Independent States, the Republic of Korea and Italy. These seven countries accounted together for almost three-fifths of world refined zinc metal consumption in 1992-1993.

15. Demand for zinc shows great differences in performance by region and by country. Despite demand slowdowns in developed market economy countries, these countries still account for around 60 per cent of total world consumption. In 1993, developed market-economy country consumption amounted to 4,092 thousand metric tons, 0.6 per cent above the 1992 level. Consumption rose mainly in the United States (9.9 per cent), Australia (16.4 per cent), Belgium/Luxembourg (11.1 per cent), Canada (5.9 per cent), Spain (5.9 per cent), and the United Kingdom (3.1 per cent). It fell, however, in a number of countries including Japan (-8.3 per cent), Germany (-7.8 per cent), France (-12.6 per cent), Norway (-30.6 per cent) and Italy (-1.7 per cent). Germany, Japan and the United States accounted for nearly 60 per cent of developed market economy country consumption.

16. Developing country consumption in 1993 rose by 11.1 per cent to 1,493 thousand metric tons following a slight decrease of 0.7 per cent in 1992. Increases occurred mainly in the Republic of Korea (17.1 per cent), Taiwan Province of China (32.9 per cent), Brazil (27.4 per cent), Peru (40.0 per cent), India (7.1 per cent), Singapore (87.5 per cent), Nigeria (82.5 per cent), Argentina (12.2 per cent), and the Philippines (7.2 per cent); decreases occurred mainly in Indonesia (-14.0 per cent) and Mexico (-7.4 per cent). With recent rapid increases, developing country consumption now accounts for over 22 per cent of the world total, compared to less than 15 per cent at the beginning of the 1980s. However, most of this consumption is concentrated in a few countries. The Republic of Korea alone accounts for over one-fifth of developing countries refined zinc consumption, while the ten largest consumers (Republic of Korea, Taiwan Province of China, India, Brazil, Mexico, South Africa, Thaïland, Peru, Turkey and Indonesia) account together for over four-fifths of total developing country consumption. The developing country per capita consumption of zinc is still very low, less than 0.6 kg, compared to 4.8 kg in developed market economy countries. This lower per capita consumption would suggest that there exists a significant potential of demand growth in the developing countries in future.

17. As in the case of most other minerals and metals, zinc demand in countries of Eastern Europe has suffered from the sharp falls in industrial activity that have followed recent political and economic reform (see also paragraph 30). In 1993, consumption of zinc metal in these countries, after five years of

consecutive decline, was estimated at 482 thousand metric tons, i.e. less than one-third of its estimated level for 1988 (1,473 thousand metric tons). Their share of world consumption in the meantime fell from 20.5 per cent to 7.3 per cent. By country, consumption of zinc metal during the same period dropped from 750 metric tons to 330 thousand metric tons in the former U.S.S.R.,[2] and from 723 thousand metric tons to 152 thousand metric tons in the rest of Eastern Europe (Bulgaria, Czech Republic, Slovakia, Hungary, Poland and Romania).

18. Recently, zinc consumption has expanded rapidly in China as its economy takes off with double-digit growth rates. Zinc consumption in China, which had been at an estimated 391 thousand metric tons in 1989, jumped to 551 thousand metric tons in 1992. Consumption slightly declined to 530 thousand metric tons in 1993. Despite the performance in recent years, the per capita zinc consumption in China is lower than in developing countries. Consumption in the Democratic People's Republic of Korea was estimated at 35 thousand metric tons in 1993, down from 36 thousand tons in 1992 and 40 thousand metric tons a year from 1988 to 1991.

19. Demand for zinc is strongly influenced by industrial activity, particularly in the transportation and construction industries[3] whose prospects are likely to improve greatly as economic conditions strengthen in the major world economies. While consumption is expected to remain strong in major consuming countries, including China and the United States, it is expected to improve elsewhere as well, including Japan, France and Germany. The International Lead and Zinc Study Group (ILZSG) forecast for 1994 was for a 3 per cent increase in zinc consumption.

II. Developments in supply

20. The principal source of supply of zinc is mine production (primary zinc) and scrap recycling (secondary zinc). Secondary zinc accounts for a lower share of total metal supply than in the case of other base metals such as lead, although it has been on the increase in recent years. There is currently an abundant supply of zinc, resulting mainly from the steady expansion of mine capacities in the developed market-economy countries and developing countries and China, the substantial net exports by countries of Central and Eastern Europe and the large accumulated amounts of material held in stock.

A. Production of refined zinc

21. Mine production and processing of zinc ore are not quite as highly integrated geographically as in the case of minerals and metals such as lead and tin. A high proportion of mine production crosses national borders before the zinc ore is processed into refined zinc or zinc products. Developed market economy countries account for about 60 per cent of the world production of zinc metal while they produce, on average, 50 per cent of the world zinc ore. In contrast, developing countries process the equivalent of only two-thirds of the ores they produce while the other third is exported for conversion into zinc metal at overseas smelters. However, this situation may gradually change with the expansion of smelter capacities likely to take place in developing countries, particularly in the Asian region where operating costs are relatively low.[4]

22. In 1993, world metal production was estimated at 7,106 thousand metric tons, up by 3.2 per cent further to the increases of 0.6 per cent in 1992 and 2.3 per cent in 1991 (annex I). Despite increased metal production, the market

faces a surplus of smelting capacities because of new smelters coming on stream including in emerging newly industrialized countries, at the same time as smelter capacities have been idled with the fall in mine production in countries of Eastern Europe. The demand slow-downs in 1992-1993 put considerable pressure on zinc smelters in several developed market economy countries to restructure or reduce capacity, particularly those supplying mainly a limited domestic market or dependent on substantial imports of zinc ore.[5]

23. Developed market economy country production of zinc metal amounted to 4,145 thousand metric tons in 1993, down by 2.6 per cent compared to increases of 2.0 per cent in 1992 and 5.0 per cent in 1991. Production of zinc metal in Japan and most western European countries including Belgium/Luxembourg, France, Germany, Italy, Netherlands, Norway and United Kingdom, depends heavily on imported zinc ore as these countries produce little or only limited amounts. On the other hand, domestically produced zinc ore in Australia and Canada largely exceeded production of zinc metal in those countries. In the United States, production of zinc metal relied on substantial ore imports until recently when this situation was reversed, mainly as a result of increased domestic ore output. In 1993, production fell, mainly in Japan (-4.5 per cent), Spain (-7.1 per cent), Australia (-4.5 per cent), Belgium/Luxembourg (-3.2 per cent), Canada (-1.5 per cent), Germany (0.6 per cent), and Netherlands (5.7 per cent). However, it increased in the United Kingdom (8.2 per cent) and Norway (4.7 per cent).

24. Developing country production of zinc metal showed a strong recovery in 1993, up by 9.5 per cent to reach 1,293 thousand metric tons, following a 3.5 per cent decrease in 1992. Domestic processing of zinc ore into zinc metal varies greatly among developing countries. Brazil processes most of its zinc ore domestically into unwrought or higher value added products before zinc is exported or consumed domestically; Bolivia processes no zinc ore domestically. In some other developing countries, including Argentina, Peru, Thailand and Turkey, domestic processing of zinc ore into zinc metal or zinc products accounts for only part of their ore production. In Mexico, domestic processing has accounted recently for an increasingly smaller proportion of its ore output. As regards India and the Republic of Korea, their expanding domestic zinc market has meant an increase in domestic zinc production that greatly exceeds domestically produced zinc ore. In 1993, production rose in Mexico (37.8 per cent), Peru (27.4 per cent), South Africa (15.7 per cent), India (9.5 per cent), and Brazil (4.4 per cent). But it fell in Zaire (-79.0 per cent), Algeria (-12.5 per cent), and Argentina (-11.4 per cent).

25. In the countries of Eastern Europe, and socialist countries of Asia, most of the zinc ore is processed by domestic smelters. However, as domestic ore production fell drastically, smelters in eastern Europe began to rely increasingly in recent years on imported ores, which are toll converted into zinc metal for re-export. Despite the increased ore imports, production of zinc metal has continued to fall since 1986. In 1993, the region's production of zinc metal amounted to an estimated 663 thousand metric tons, down by 1.2 per cent, the smallest drop in the last seven years. Production of the former U.S.S.R. was estimated at 502 thousand metric tons in 1993, down from 540 thousand metric tons in 1992 and 575 thousand metric tons in 1991. The main producers are Kazakhstan and the Russian Federation, which account for 55 per cent and 25 per cent, respectively, of total production.[6]

26. In contrast, zinc production in China has jumped sharply in recent years. Driven by a growing domestic market, the country has emerged as the largest

world producer of zinc metal, ahead of Japan and Canada in 1993. Its 1993 production amounted to 857 thousand metric tons, up by 32.3 per cent further to the increases of 12.3 per cent in 1992 and 9.7 per cent in 1991. Although further expansion may be under way', such expansion is expected to be at a slower pace. The respective production of zinc metal in the Democratic Republic of Korea and Viet Nam were put at 115 to 120 thousand metric tons and 10 thousand metric tons.

B. Mine production

27. World mine production was recently underpinned by increased competition among smelters for feedstock although such demand gradually weakened as smelters faced squeezed margins of return owing to falling zinc prices. In 1993, world mine production was estimated at 6,837 thousand metric tons, down by 5.4 per cent following a slight decrease in 1992 (-0.3 per cent) but increases of 3.6 per cent and 3.1 per cent, respectively, in 1990 and 1991. The five largest producers of zinc ore are Canada, Australia, China, Peru, and the United States. Together they accounted for close to three-fifths of world zinc mine production in 1993.

28. Developed market economy countries currently supply about half of world mine production, over three-fourths of which originate from Australia, Canada and the United States. In 1993, developed market economy country mine production amounted to 3,259 thousand metric tons, down by 12.8 per cent in the wake of increases of 10.3 per cent in 1990, 0.6 per cent in 1991 and 0.1 per cent in 1992. Decreases occurred in most countries, but mainly in Canada (-24.0 per cent) which alone accounted for two-thirds of the decrease in developed market economy countries, the United States (-7.0 per cent), Spain (-17.5 per cent), Italy (-77.1 per cent), Japan (-11.8 per cent), and Australia (-1.8 per cent). These were only marginally offset by increases in a few smaller producing countries, including Austria (20.3 per cent) and Sweden (2.3 per cent).

29. Developing country mine production in 1993 amounted to 1,973 thousand metric tons, up by 4.7 per cent further to the increase of 5.8 per cent in 1991 and 1.9 per cent in 1992. Significant production increases occurred mainly in Peru (10.3 per cent), Morocco (205.1 per cent), Mexico (5.6 per cent), Brazil (19.8 per cent), South Africa (12.0 per cent), Islamic Republic of Iran (7.7 per cent) and India (2.3 per cent). Production declined mainly in Zaire (-72.2 per cent), Bolivia (-13.4 per cent), Republic of Korea (-37.0 per cent), Argentina (-23.4 per cent) and Honduras (-25.7 per cent). The five largest producers are Peru, Mexico, India, Brazil and Bolivia, which together accounted for nearly three-quarters of developing country production.

30. In countries of Eastern Europe, mine production has also been negatively affected by the recent economic and political transition. It has been continuously declining since 1989, reaching 695 thousand metric tons in 1993, or 25 per cent below the 1989 level. However, the decline seems to be levelling off or even reversing in some of these countries. Mine output fell by 11.1 per cent to 489 thousand metric tons in the former U.S.S.R. but remained virtually stable at 151 thousand metric tons in Poland after rising by 4.8 per cent in 1992. The other countries of Eastern Europe produce relatively small amounts of zinc.

31. Despite the fact that its zinc resources are regarded as limited by some

sources, China has experienced a substantial expansion of its mine production. As a result, its proportion in the world total has jumped from less than 3.0 per cent at the beginning of the 1980s to nearly 12 per cent recently. In 1993, its mine production amounted to 775 thousand metric tons, a jump of 9.8 per cent over the previous year. In the Democratic People's Republic of Korea, production peaked at 150 thousand metric tons in 1984 and 1988, but it has since been in decline although there are some recent signs of recovery. Production in 1991, 1992 and 1993 in the Democratic People's Republic of Korea was estimated at 120 thousand metric tons, compared to 100 thousand metric tons in 1990.

32. The potential for future expansion of mine production, particularly in developing countries remains substantial. Pressure for the exploration and development of domestic zinc resources is expected to continue as domestic and regional consumption continue to grow. Hitherto, the zinc resources of developing countries[8] were estimated to account for only 16 per cent of market economy country demonstrated zinc resources (annex II). This view is changing. Although generally of small size, their zinc resources are of a higher grade on average. Continued improvement in geological knowledge and improved physical, institutional and legal infrastructure for supporting mining activity, including mineral exploration, may also contribute to alter this picture. However, financial resources would probably remain a serious constraint.

C. Scrap recycling

33. In 1993, the recovery of secondary zinc in market economy countries amounted to 1,882 thousand metric tons, down by 0.7 per cent following consecutive annual increases since 1985 (annex III). At its 1993 level, it is equivalent to 34.0 per cent of market economy country zinc metal consumption, compared to 28.1 per cent in 1983. Despite recent progress, scrap recycling to recover zinc has been limited by a number of factors including the dispersed use of zinc in many applications which makes scrap recovery expensive if not impossible, and the high cost of recovering zinc in its refined form from such scrap as galvanized and coated products.

34. Most of the recycled scrap is of factory and in-house origins, easy to collect and easy to recycle. In some cases, the recycling process consists of throwing back the scrap into the melt. The larger part of secondary zinc is in fact recovered from scrap in the form of remelted zinc and direct use of secondary materials. In 1993, with the decline of scrap generated by industrial activity, secondary zinc recovered in this form amounted to 1,430 thousand metric tons, down by 2.6 per cent from the previous year. The largest producers were Japan, United States, Italy and Germany. As regards developing countries, they accounted for less than 20 per cent of the recovery of remelted zinc and direct use of secondary materials. The proportion has been rising recently particularly in the Asian region.

35. The recovery of secondary zinc in the form of refined zinc metal has progressed at a slower pace than zinc recovered in the form of remelted zinc and direct use of secondary materials referred to above, owing mainly to the higher cost of the process. It accounts for about 7 per cent of market economy country consumption. Market economy country production of secondary zinc in this form amounted to 452 thousand metric tons in 1993, up by 5.9 per cent. The overall increase was owing mainly to increases in France (60 per cent) and Belgium/Luxembourg (55 per cent). The United States and Japan are, respectively, the first and second largest producers of secondary zinc in the form of refined

metal and accounted for over 47 per cent of total production. Developing countries recycle very little zinc scrap into refined zinc metal.

D. Stock movements

36. There has been a sharp increase in world stocks of refined zinc in recent years (annex IV). The main factors that have influenced the stock level have been the recession in industry, which has led to an abundant surplus of material, the build-up of inventories following the depletion in earlier years and increased shipments from China and the countries of Eastern Europe. World stocks of refined zinc including both London Metal Exchange (LME) and country stocks stood at 1,723 thousand metric tons at the end of August 1994, up by 19.0 per cent compared to their level at the end of December 1993, further to increases of 49.3 per cent in 1993, 50.0 per cent in 1992 and 24.0 per cent in 1991. To the August 1994 figure above should be added consumer stocks held in non-reporting countries, which were estimated at 141 thousand metric tons by the International Lead and Zinc Study Group. Not counting these estimated consumer stocks, the level of stocks at the end of August 1994 corresponded to almost 16 weeks of world zinc metal consumption.

37. The larger part of world stocks is now held in the hands of the LME which accounts for practically all of the recent increases. As at the end of August 1994, LME stocks amounted to 1,234 thousand metric tons, compared to 907 thousand metric tons at the end of 1993, 458 thousand metric tons at the end of 1992, 152 thousand metric tons at the end of 1991 and only 55 thousand metric tons at the end of 1990. This represents more than a 22-fold increase in three and a half years. As a consequence, the share of LME stocks in total world reported commercial stocks rose from 10.5 per cent to 71.6 per cent during the period. The stock material was held principally in warehouses in Rotterdam, Singapore, Antwerp and Trieste. It might be noted that Singapore and Trieste have recently emerged as significant centres for warehousing LME material.

38. Compared to the surge in LME stocks, country stocks (producers', consumers' and merchants' stocks) have remained relatively stable since 1990, at around 500 thousand metric tons. As at the end of August 1994, reported country stocks amounted to 489 thousand metric tons, down by 9.7 per cent compared to the end of December 1993, thus nullifying the increase of 8.3 per cent which took place in 1993.

39. In addition to the LME and country stocks, a substantial amount of zinc is held by the United States in its strategic stockpiles. Between 1989 and 1992, the United States had released no stockpile material for sale but this policy has recently changed. Zinc is now considered as being in surplus in the stockpiles. In 1993, some 15 thousand metric tons were sold and stockpile material stood at 326 thousand tons at the end of the year. Recent reports indicated that an authorized amount of 50 thousand metric tons was still available for sale up to the end of the current fiscal year,[9] of which 22.6 thousand tons had been sold by the end of August 1994.

III. DEVELOPMENTS IN TRADE

40. Despite the less favourable demand conditions which have characterized the zinc market recently, international trade in zinc material (both zinc metal and zinc ore) has been underpinned by an expansion of intra developed market economy country trade, an increasing volume of re-export trade, rising imports of developing countries and growing cross-border smelting.

41. The latter development has been fostered by the closure of uneconomic domestic smelting capacities in the face of reduced feedstock and deteriorating zinc prices. As a result, proportionally increased amounts of zinc material are being shipped across national borders to be processed by smelters with spare capacity abroad before being re-exported as refined zinc.

42. As a group, developed market economy countries and the countries of Eastern Europe are net exporters of zinc metal but net importers of zinc ore; whereas the developing countries are net importers of zinc metal but net exporters of zinc ore. China is a net exporter of both zinc metal and zinc ore. Another major aspect which characterises the international trade in zinc material is that over 60 per cent of it consists of intra developed market economy country trade. Many developed market economy countries are both substantial importers and exporters of the material.

A. Trade in refined zinc (including alloys)

43. In 1993, world imports of zinc metal (including alloys) amounted to 2,868 thousand metric tons, up by 10.5 per cent following a 13.5 per cent increase in 1992 after a 3.7 per cent fall in 1991 (annex V). While the rise in 1992 was owing mainly to increased imports of developed market economy countries, almost two-thirds of the increase in 1993 was owing to increased imports by developing countries and one third to increased imports of zinc metal by developed market economy countries. World imports of zinc metal grew for most of the past 10 years although there were set-backs in some years, including 1989 and 1991.

44. The developed market economy countries accounted for over two-thirds of world imports. In 1993, their imports amounted to 1,937 thousand metric tons, up by 5.7 per cent further to the increase of 16.6 per cent in 1992. A substantial portion of these increases ended up in LME warehouses. The largest increase in 1993 imports occurred in the Netherlands where zinc imports rose by 367.7 per cent. Imports also rose significantly in the United States (7.2 per cent) and in Belgium/Luxembourg (26.6 per cent). However, they fell in several countries, among the most significant was Germany (18.0 per cent) and Japan (19.3 per cent). The largest importing countries were the United States, Germany, Belgium/Luxembourg, Netherlands, France, United Kingdom, Italy and Japan, which together accounted in 1993 for 91 per cent of imports by developed market economy countries and over three-fifths of world imports.

45. Developing countries accounted in 1993 for 29 per cent of world imports of zinc metal (including alloys), against 20 per cent in 1984-1985. Their imports are concentrated in a small number of countries, mainly the newly industrialized countries. The largest importers include Taiwan Province of China, Singapore, Hong Kong, Indonesia, Republic of Korea, Philippines and Malaysia, which together account for around three-quarters of developing country imports. Imports of zinc metal have been expanding fast in developing countries recently despite local factors, such as wars in ex-Yugoslavia. The expansion seems likely to continue in the future given the expected substantial increase in zinc demand. Among those leading the expansion are: Taiwan Province of China, Singapore, Indonesia, Malaysia and the Philippines, most of which are economies that have achieved high growth rates recently. The rising imports have been accompanied by the establishment or expansion of domestic smelters to supply domestic and regional markets.

46. In 1993, developing country imports set a new record peak of 826 thousand metric tons, up by 26.1 per cent further to the increase of 5.6 per cent in

1992. The largest increase in volume of imports occurred in Singapore, up by 82.2 per cent, owing largely to the increase of LME stock material in Singapore warehouses. Imports also rose in Taiwan Province of China (22.1 per cent), Hong Kong (27.2 per cent), the Republic of Korea (85.3 per cent), Indonesia (14.3 per cent), and Thailand (120.3 per cent).

47. Imports of countries of eastern Europe stabilized in 1993 at practically their 1992 level, at 66 thousand metric tons, after having progressively decreased from 194 thousand metric tons in 1988 to 65 thousand metric tons in 1992. With the rapid development of its zinc resources and smelting capacities, China had been importing relatively small volumes between 1989 and 1991. However, its imports have increased to around 40 thousand tons in both 1992 and 1993, although Chinese zinc requirements are now largely satisfied by domestic production.

48. As regards exports of zinc metal, shipments continued to recover in 1993, following set-backs in 1989 and 1990. Sustained shipments brought world exports of zinc metal to a record peak of 2,917 metric tons, up by 9.4 per cent further to the increases of 19.2 per cent in 1992 and 2.8 per cent in 1991. However, the performance of exports has varied widely among regions and among countries.

49. Developed market economy countries account for around 70 to 75 per cent of world exports. In 1993, exports of zinc metal from developed market economy countries amounted to an estimated 2,007 thousand metric tons, down by 0.6 per cent, following an increase of 11.8 per cent in 1992. Exports decreased in Germany (-16.0 per cent), Italy (-39.6 per cent), Netherlands (-9.8 per cent), Canada (-3.5 per cent), Spain (-3.7 per cent), and Australia (-2.1 per cent). However, several exporting countries experienced increased exports. The largest increase occurred in France (23.5 per cent). Shipments also increased from Belgium/Luxembourg (7.5 per cent), Norway (12.0 per cent), and United Kingdom (29.7 per cent). The largest exporting countries were: Canada, Australia, Belgium/Luxembourg, Spain, France, Finland, Netherlands, Norway and Germany, which together accounted in 1993 for 95 per cent of developed market economy country exports and two-thirds of world exports.

50. Developing countries currently export 16 to 17 per cent of their zinc production in the form of zinc metal, compared to over 43 to 46 per cent in the form of zinc ore. Four countries only, Peru, Mexico, Brazil and Republic of Korea, accounted in 1993 for 95 per cent of developing country exports of zinc metal. Unlike developed market economy country exports, exports of developing countries had been declining continuously between 1989 and 1992. This trend, attributable to several factors, including deteriorating export demand conditions and increased domestic consumption, seems to have been reversed in 1993, when their exports increased by 12.7 per cent, regaining their 1991 level. The large increases which occurred in 1993 in Mexico (91.3 per cent) and Peru (32.7 per cent) more than offset the declines in the Republic of Korea (-18.3 per cent) and Brazil (-10.7 per cent). The former- Yugoslavia ceased export of zinc metal as a result of the disruptions caused by war.

51. Exports from the countries of Eastern Europe experienced an upsurge during 1992 and 1993 following successive decreases since 1988. In 1993, their exports rose by 50 per cent to 264 thousand metric tons, further to the more than five-fold increase in 1992. Practically all of the material was exported from the former U.S.S.R., Poland, and Bulgaria. The 1993 exports from the former U.S.S.R. rose from 80 to 149 thousand metric tons, from Poland, from 60 to 65 thousand metric tons, and Bulgaria, from 35 to 50 thousand metric tons. A

substantial part of the exports consisted of material re-exported after cross-border smelting hence material mostly of market economy country origin.

52. There has been also a jump in Chinese exports. From a net importing country, China has recently emerged as a substantial net exporting country, ranking only behind Canada, Australia, Belgium/Luxembourg and Spain. In 1993, exports from China rose to 206 thousand metric tons from 85 thousand metric tons in 1992 and 7 thousand metric tons in 1991. Exports from the Democratic People's Republic of Korea were estimated at 80 thousand metric tons in 1992 and 95 thousand metric tons in 1993.

B. Trade in zinc ore

53. Zinc ore makes up a little over half of the international trade volume in zinc material (not including scrap). Developed market economy countries accounted in 1993 for 87 per cent of world imports and for 69 per cent of world exports. Australia, Canada, United States, Ireland and Sweden are the world largest exporters and accounted together for almost two-thirds of world exports in 1993. Japan, Germany, France, Italy, Belgium-Luxembourg, Netherlands, Spain, Finland, Canada, and United States were the world largest importers and accounted together in 1993 for over 80 per cent of world imports of zinc ore. The United States and Canada import substantial volumes, although both are essentially net exporting countries.

54. In 1993, world imports of zinc ore amounted to an estimated 2,964 thousand metric tons, down by 16.6 per cent per cent following a 33.6 per cent increase in 1992 (annex V). This was partly owing to an exceptional increase in imports by the United States in 1992. However, it is felt that deteriorating price conditions and squeezed profit margins of smelters contributed to the reduction in ore imports.

55. Most of the world imports consist of material shipped from one developed market economy country to another; an increasing proportion of the recent trade consists of material for cross-border smelting. In 1993, developed market economy country imports declined by 13.1 per cent to an estimated 2,080 thousand metric tons with falls occurring notably in the United States (-77.4 per cent), Canada (-27.3 per cent), France (-12.5 per cent),Japan (-4.2 per cent), and the Netherlands (-10.1 per cent). However, shipments rose to Germany (9.1 per cent) and the United Kingdom (13.5 per cent).

56. According to the International Lead and Zinc Study Group, the former U.S.S.R./C.I.S. had recently become an increasingly significant importer of zinc ore. Its imports jumped to 169 thousand metric tons in 1993 from 110 thousand metric tons in 1992 and 10 thousand metric tons in 1991. Most of this imported material was for cross-border smelting (and is not, therefore, reported in the country statistics in annex V).

57. Unlike the developed market economy countries and countries of Eastern Europe, few developing countries have benefitted from cross-border smelting. Only a few developing countries import zinc ore. The Republic of Korea alone accounted in 1992 and 1993 for around two-thirds of developing country imports, the remaining one-third being accounted for almost entirely by Brazil, Thailand, Algeria and India. Developing country imports of zinc ore in 1993 were estimated at 335 thousand metric tons, down by 14.4 per cent. China imports only very small quantities of zinc ore.

58. As regards exports of zinc ore, following an increase of 10.8 per cent in 1992, world exports decreased by 9.3 per cent to 3.028 thousand metric tons in 1993, back to their 1992 level. This decrease was almost entirely owing to decreases in exports by developed market economy countries, which account for 69 per cent of the volume of world exports. Exports fell notably in Canada (-27.2 per cent), Australia (-8.0 per cent), and Ireland (-11.6 per cent). These three countries accounted in 1993 for over three-quarters of developed market economy country exports of zinc ore or over half of the world export market.

59. Developing countries accounted together in 1993 for 28 per cent of world exports of zinc ore. In 1993, the decrease in smelters' demand which had underpinned exports of zinc ore in 1992 reduced developing country exports which fell by 2.5 per cent to an estimated 842 thousand metric tons. As zinc resources are either limited or underdeveloped in most of African and Asian developing countries, developing country exports originate largely from Latin America. The three largest exporters, Peru, Mexico and Bolivia, together accounted for around 85 per cent of developing country exports in the period 1992 to 1993. Morocco has emerged as a significant exporter in 1993, following the development of its Hajar mine by the Compagnie Minière de Gemassa.

60. The countries of Eastern Europe and the socialist countries of Asia exported relatively small volumes of zinc ore. In 1993, Eastern Europe exported 48 thousand metric tons, practically the same volume as in 1992, which was a significant increase from the levels exported before (between 1 and 15 thousand metric tons a year during the 1980s). Most of this material came from Poland. Shipments from China increased from 33 thousand metric tons in 1992 to 59 thousand metric tons in 1993.

IV. Developments in zinc prices

61. Until quite recently, zinc enjoyed more favourable price conditions than most other minerals and metals, including base metals such as copper, nickel, tin and lead (see figure). These conditions were largely owing to the better balance between demand and supply resulting from growing demand for zinc as compared with many other mineral and metal markets which were afflicted by oversupply. During periods of downward pressure on mineral and metal prices, such as in 1982 and 1986, zinc prices showed a greater degree of resilience while the prices of many minerals and metals dropped sharply or virtually collapsed in some cases. Moreover, zinc prices in 1981, 1984, 1987, 1988 and 1989 made substantial gains that few other minerals and metals were able to achieve.

62. Nevertheless, the price of refined zinc has recently suffered a severe decline as the world economy experienced its longest period of recession since 1980. The recent set-back in the price of refined zinc has its origin, at least partly, in the high prices of earlier years when rapidly rising prices attracted substantial new investment in zinc mining and smelting capacities. Between 1986 and 1989, the strong performance of the world economy led to more than a doubling of the prices of refined zinc on the London Metal Exchange (LME), from an annual average of $US 712 per metric ton to an annual average of $US 1,713 per ton, corresponding to an increase of 34.0 per cent per annum on average.

63. In 1990, zinc prices began to recede from their peak, as industrial activity weakened. However, export cutbacks mainly by developed market economy

countries helped balance demand and supply, and cushioned the zinc market from steeper price falls. In 1990, zinc prices were down by 11.3 per cent to an annual average of $US 1,519 per metric ton. As the world economy plunged into deeper recession and imports were further cut back, the price decline accelerated in 1991. The balance between demand and supply was not only weakened by the lower market offtake but also by an increased availability of material as zinc production rose. Much of the production increase was absorbed in LME and country stocks which increasingly overhung the market. In 1991, zinc prices decreased by a further 26.4 per cent to an annual average of $US 1,118 per metric ton.

64. However, zinc prices were firmer in the first half of 1992. In early 1992, refined zinc was traded at an average monthly price of $US 1,154 per metric ton which rose to $US 1,304 per metric ton towards the beginning of the second quarter. Prices of zinc metal continued to climb, reaching $US 1,386 per metric ton by mid-1992. The recovery was unsustainable, however, as the zinc market experienced increased availability of zinc material, large accumulated stocks in warehouses and substantial shipments from China and the countries of Eastern Europe, while the economic upturn in the world economy looked increasingly remote, particularly in Germany and Japan. Notwithstanding the setbacks in the second half of the year, LME zinc prices achieved an overall annual average price of $US 1,240 per ton in 1992, up by 10.9 per cent compared to 1991.

65. Refined zinc was traded at $US 1,061 per ton as the market began 1993. As the market situation further deteriorated, zinc prices slid for most of the second and third quarters to a monthly average of $US 875 per metric ton at the end of the third quarter. There was, however, some improvement in the last quarter with the monthly average price recovering to $US 975 per metric ton at the end of 1993. On average, for 1993, the LME zinc price was down by 22.3 per cent to $US 964 per metric ton in 1993, a level which had wiped out all price improvements since 1988 (annex VI).

66. As the market entered 1994, the large accumulated stocks and the slower than expected economic recovery in major world economies dampened hopes for a firmer zinc price. Despite production cutbacks, particularly in Australia, Canada and United States, prices of refined zinc continued to deteriorate, down to $US 924 in April 1994. As the recent world economic recovery began to gather strength, prices had climbed to $US 1,059 per metric ton at the end of October 1994, i.e. 8.6 per cent above the December 1993 level, confirming earlier forecasts which had predicted an increase of 9 per cent in zinc prices in 1994.[10]

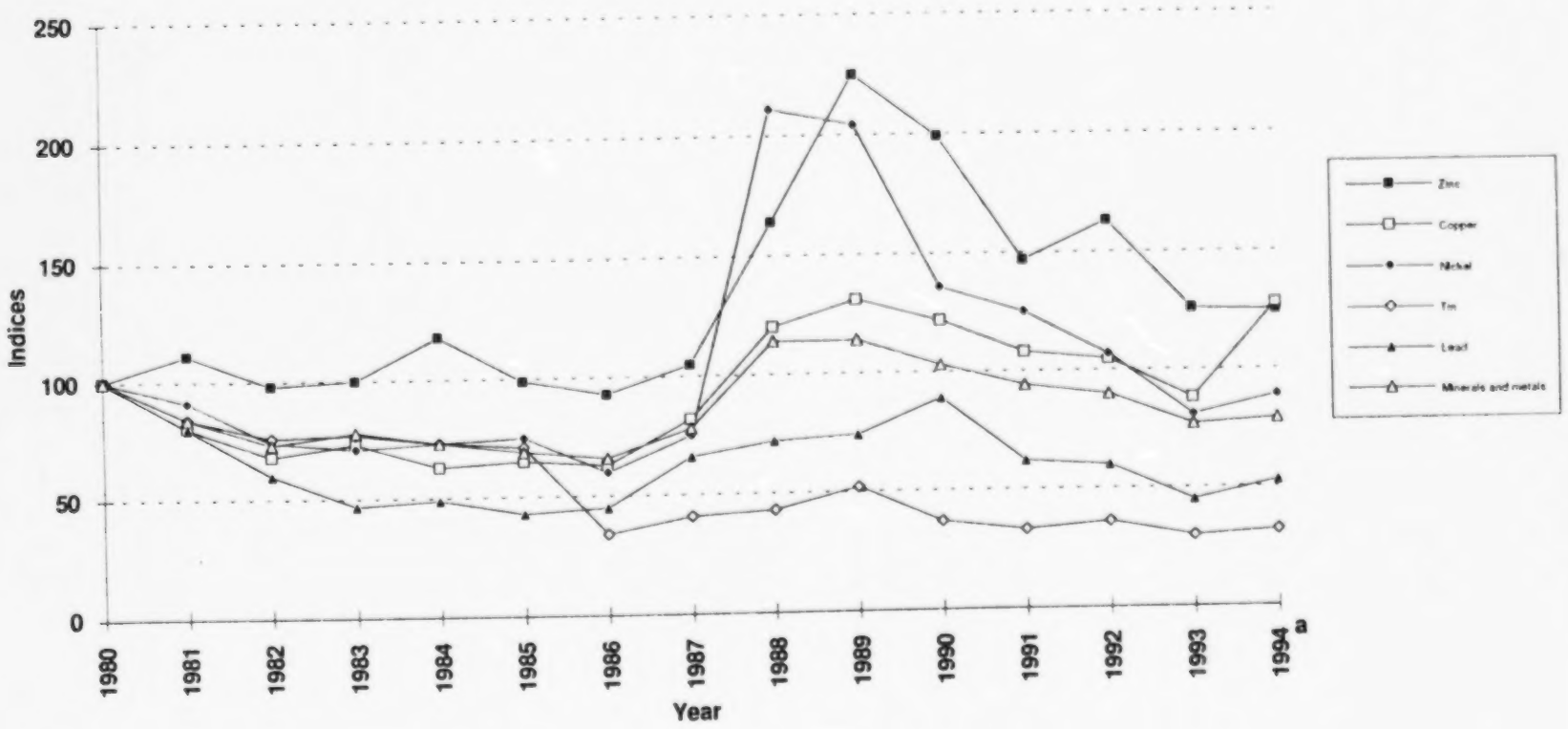
V. Conclusions

67. With forecasts of a modest recovery in zinc demand and reduced supply as a result of recent production and capacity cutbacks, the worst may be over in the zinc market, which has recently suffered from abundant material, accumulated stocks and falling prices. Prospects for improvement in the zinc market will depend on the continuation of the recovery of the world economy and on the strengthening of the balance between demand and supply.

68. On the demand side, although the world economy is currently experiencing a clear recovery, zinc consumption is still affected by low economic growth rates in several major economies, particularly in Japan. In the longer term, growth rates in major economies are expected to strengthen, thus generating

Figure

Zinc and base metal indices 1980-1994



Source: UNCTAD monthly commodity price bulletin (based on LME prices)

a/ See annex VI.

higher zinc demand. Increased capital investment and consumer spending would benefit zinc consumption, particularly in such industries as transportation and construction.

69. While zinc consumption is still expected to grow in developed market economy countries, an increasing proportion of future demand growth will take place in the developing countries and China, where per capita zinc consumption is currently less than one-eighth that of developed market economy countries. As standards of living improve, zinc consumption in eastern, south-eastern and southern Asian countries has recently been increasing fast, and a substantial potential remains for further growth. Growth in zinc consumption is also expected in other developing countries, particularly in some major Latin American countries.

70. In the countries of Eastern Europe, the demand situation may begin to stabilize if not reverse, following successive falls in zinc consumption in recent years. However, it may take considerable time before consumption reaches the level of the late 1980s and these countries again become net importers of zinc like before the recent economic and political transition started.

71. As regards supply, there is currently an abundant supply of zinc material including large LME and country stocks, and substantial idle capacities with recently withdrawnable as a result of production cutbacks. The overhang effect of the surplus material and idle capacities and large shipments from China and the countries of Eastern Europe will probably limit any price recovery in the short term until these are absorbed by higher demand. Chinese exports are expected to be cut back as domestic consumption continues to expand and China adopts increasingly market-driven policies which have recently led to reduced government subsidies and other forms of support for mining operations, and higher taxation rates.

72. In the longer term, production capacity will expand to meet the expected future growth in zinc demand. However, future capacity expansion will be geographically more diversified. The periods of high prices in the 1980s attracted considerable investment in both zinc mining and smelting in developed market economy countries. Their large zinc resources would still favour expansion in these countries.

73. However, prospects for supply expansion have considerably improved in developing countries and China with the expansion of domestic and regional markets. Although they have been considered as more poorly endowed in zinc resources than the developed market economy countries, their share of world mine production has been growing. The continued improvement in geological knowledge and improved physical, institutional and legal infrastructure for supporting mining activity will enhance the growth of their mineral production, including zinc production.

74. In conclusion, the balance between demand and supply is expected to strengthen in the short term as a result of improved market demand and progressive absorption of the large accumulated stocks. In the longer term, demand for zinc seems likely to continue to grow, which would sustain the expansion of supply, including the re-opening of recently voluntarily-withdrawn capacities. Greater participation of developing countries in the zinc market can also be expected.

Notes

1. Between 1979 and 1992, the world economy grew by only 2.2 per cent per annum compared to 4.2 per cent per annum in the 1970s.

2. No separate estimates of zinc consumption were available for the Russian Federation at the time of writing.

3. The importance of transportation and construction as major consuming industries of zinc can be visualized taking the North American market as an example. These two industries absorb more than 86 per cent of galvanized products, which account for more than 50 per cent of zinc consumption in the United States. There are other products such as zinc alloys that are also widely used in transportation and construction which make economic activity in these industries a major determinant of zinc consumption (See "Quality drives North America galv investments", Metal Bulletin Monthly, December 1993.

4. See "Low costs, integration needed for Pb-Zn", Metal Bulletin, 15 November 1993, page 12.

5. European zinc producers are at present negotiating a smelter 'shut-down' agreement where the industry as a whole would pay the cost of closing one or two smelters (See Financial Times, 15 December 1993, page 24).

6. Refer to "Lead and zinc output in the C.I.S.", Mining Journal,London, 3 December 1993, page 388.

7. Refer to Mineral Journal, London, 3 December 1993, page 382.

8. Western sources estimated Chinese lead and zinc reserves at between 3 and 5 million metric tons but these figures would need to be substantially revised upward as a result of the discovery of new reserves (see Carmine Nappi, China and western mineral markets: Threats or opportunities, Ecole des Hautes Etudes Commerciales, Montreal, 1992, page 148.

9. Mikell Knights, "Zinc producers expect harm from DLA sales", American Metal Market, 13 April 1994, page 4.

10. See "Australian mineral earnings look healthy", Mining Journal, London, 14 January 1994, page 23.

Annex I

World consumption and production of refined zinc[a] and mine production of zinc by region, 1989-1993

(Thousand metric tons of metal content)

	1989	1990	1991	1992	1993
A. Consumption of refined zinc					
World total	6,740	6,685	6,717	6,5696,648	
Developed market economy countries	3,969	3,971	4,107	4,0694,092	
Developing countries	1,248	1,258	1,352	1,3431,493	
Countries of Eastern Europe	1,088	910	679	557482	
Socialist countries of Asia	435	546	579	600581	
B. Production of refined zinc					
World total	6,779	6,685	6,841	6,8847,106	
Developed market economy countries	3,983	3,974	4,172	4,2544,145	
Developing countries	1,223	1,197	1,224	1,1811,293	
Countries of Eastern Europe	992	868	728	671663	
Socialist countries of Asia	581	646	717	7781,005	
C. Mine production of zinc					
World total	6,785	7,031	7,247	7,2286,837	
Developed market economy countries	3,368	3,715	3,736	3,7383,259	
Developing countries	1,750	1,746	1,848	1,8841,973	
Countries of Eastern Europe	927	842	818	765695	
Socialist countries of Asia	740	728	845	841910	

Source: World Metal Statistics, published by World Bureau of Metal Statistics.

a/ Refers to slab zinc

Annex II

Summary of market economy country demonstrated resources as of January 1989

Contained re-	Demonstrated resources (Million metric tons)	Grade %	resources (Million metric tons)
A. Developed market economy countries			
Australia	258,809	8.72	22,278
Austria	6,415	6.50	238
Canada	454,948	6.62	30,689
Finland	16,450	2.70	475
France	11,545	6.75	856
Germany	12,229	6.53	865
Greece	18,420	4.07	875
Ireland	26,784	7.79	2,027
Italy	31,868	11.83	2,988
Japan	52,498	5.24	2,781
Norway	2,377	4.20	100
Portugal	133,376	3.60	3,360
Sourth Africa	187,530	2.25	10,997
Spain	157,955	3.45	4,346
Sweden	57,077	5.59	3,278
United Kingdom	4,800	6.00	288
United States	1,054,940	4.30	46,667
Sub-total or average a/	**2,488,021**	**5.66**	**133,108**
B. Developing countries			
Algeria	3,580	5.00	179
Argentina	2,975	7.30	217
Bolivia	3,024	7.77	266
Brazil	21,638	11.74	2,337
Myanmar	1,600	4.00	64
Chile	3,000	8.00	402
Honduras	4,159	8.00	333
India	100,627	9.21	8,504
Korea, Republic of	10,000	6.20	644
Mexico	177,123	2.69	4,742
Morocco	14,743	7.93	2,358
Namibia	6,242	2.60	1,093
Peru	77,331	7.44	5,937
Thailand	3,345	27.85	998
Tunisia	5,443	12.00	647
Turkey	25,630	8.30	2,158
Zaire	11,850	6.55	776
Zambia	1,700	22.70	382
Sub-total or average a/	**474,010**	**9.18**	**32,037**
Total or average (A + B)	**2,962,031**	**7.47**	**165,145**

Source: On the basis of The availability of primary lead and zinc in market economy countries, United States Bureau of Mines Information Circular, 1993.

a/ The grade refers to unweighted average.

Annex III

Recovery of secondary zinc, 1989-1993
(Thousand metric tons of metal content)

	1989	1990	1991	1992	1993
A. Remelted zinc and direct use of secondary materials: [a]					
Europe	**567**	**544**	**550**	**623**	**572**
France	89	80	79	85	80
Germany[c]	150	137	145	216	182
Italy	174	171	175	179	169
Other	154	156	151	143	141
Africa	**22**	**21**	**19**	**17**	**16**
America	**320**	**316**	**309**	**324**	**342**
Canada	13	12	15	15	14
United States	245	241	232	246	264
Other	62	63	62	63	64
Asia	**485**	**489**	**485**	**486**	**480**
Japan	292	295	300	296	276
Other	193	194	185	190	204
Oceania	**17**	**18**	**17**	**18**	**20**
Sub-total	**1,411**	**1,388**	**1,380**	**1,468**	**1,430**
B. Refined zinc metal[b]					
Europe	**176**	**193**	**191**	**189**	**211**
Belgium/Luxemburg	22	29	28	20	31
France	17	21	27	25	40
Germany[c]	52	49	46	55	50
Italy	25	25	23	23	20
Norway	21	22	22	23	24
Spain	12	15	15	15	15
Former-Yugoslavia	6	5	4	3	-
Other Europe	21	27	26	25	31
America	**102**	**100**	**126**	**13.**	**131**
Mexico	4	4	4	4	4
United States	98	96	122	128	127
Asia	**82**	**93**	**102**	**97**	**101**
Japan	73	82	90	84	86
Other Asia	9	11	12	13	15
Oceania	**8**	**8**	**9**	**9**	**9**
Australia	8	8	9	9	9
Sub-total	**368**	**394**	**428**	**427**	**452**
Total (A + B)	**1,779**	**1,782**	**1,808**	**1,895**	**1,882**

Source: Lead and zinc statistics, International Lead and Zinc Study Group.

a/ Consumption of remelted zinc and direct use of secondary materials, including zinc content of remelted brass, without undergoing further treatment before re-use.

b/ Slab zinc produced from secondary materials (scraps, residues and wastes).

c/ Data prior to 1991 include the former Federal Republic only.

Annex IV

World stocks of refined zinc at year-end, 1986-1994
(Thousand metric tons of metal content)

	1986	1987	1988	1989	1990	1991	1992	1993	1994a/
METAL EXCHANGE STOCKS									
London Metal Exchange									
Belgium	0.2	0.1	1.7	9.8	10.8	24.6	83.7	138.4	150.5
France	0.3	0.1	0.2	0.3	-	0.2	1.5	1.8	1.8
Germany	0.7	0.3	0.2	2.6	6.8	9.2	18.1	37.2	41.6
Italy	4.5	4.9	3.5	1.3	0.4	5.1	30.7	72.9	100.3
Netherlands	12.5	23.6	25.7	53.2	30.8	93.4	236.4	432.4	562.9
Spain	-	-	-	-	-	-	6.4	14.7	20.6
Sweden	0.2	-	0.2	1.7	1.1	0.8	1.0	25.6	52.2
United Kingdom	0.3	-	1.4	5.1	4.8	18.4	26.1	29.8	32.5
Singapore	-	-	7.8	6.7	0.1	0.6	42.9	137.0	244.6
U.S.A.	-	-	-	-	-	0.1	10.9	17.1	27.4
Total	**18.7**	**29.0**	**40.7**	**80.7**	**54.8**	**152.4**	**457.7**	**906.9**	**1,234.4**
of which									
High Grade	17.3	28.9	26.1	5.8	54.7	152.2	457.5	906.7	1234.2
Standard Grade	1.4	0.1	14.6	74.9	0.1	0.2	0.2	0.2	0.2
COUNTRY STOCKS									
Germany, F.R.									
at Producers	34.2	35.1	19.6	20.5	22.3	23.4	27.6	21.2	15.3
at Merchants	1.3	1.2	1.5	1.1	0.3	0.3	0.2	3.0	1.7
at Consumers	20.9	16.3	23.1	19.7	23.2	34.0	26.9	34.4	29.3
Total	**56.4**	**52.6**	**44.2**	**41.3**	**45.8**	**57.7**	**54.7**	**58.6**	**46.3**
United Kingdom	15.3	14.0	13.0	13.9	12.2	11.2	11.4	11.4	10.8
Other Europe									
at Producers	116.3	92.8	83.2	94.9	87.4	106.1	109.9	95.5	116.7
at Consumers	19.5	19.5	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Total	**135.8**	**112.3**	**103.2**	**114.9**	**107.4**	**126.1**	**129.9**	**115.5**	**136.7**
Japan									
at Producers	73.3	65.7	56.1	71.5	61.1	70.4	91.9	115.7	97.4
at Merchants	3.6	2.1	2.3	2.0	1.6	1.6	2.3	2.5	6.2
at Consumers	22.3	22.1	26.6	22.3	25.3	25.3	25.1	29.4	25.1
Total	**99.2**	**89.9**	**85.0**	**95.8**	**88.0**	**97.3**	**119.3**	**147.6**	**128.7**
Canada	49.4	45.0	40.1	49.9	58.1	41.7	36.5	45.0	33.5
U.S.A.									
at Producers	19.9	16.6	6.4	4.7	9.8	10.1	12.8	11.0	11.3
at Merchants	26.6	22.4	14.3	22.2	20.4	15.7	15.6	10.5	4.8
at Consumers	54.1	57.4	64.8	60.3	60.4	56.3	50.5	40.6	41.2
Total	**100.6**	**96.4**	**85.5**	**87.2**	**90.6**	**82.1**	**78.9**	**62.1**	**57.3**
Brazil	1.6	6.1	8.6	2.6	2.6	..	..	..	..
Australia	55.0	40.1	34.6	43.3	27.6	30.8	30.2	28.4	20.6
Other countries	53.7	45.1	46.5	37.8	34.5	47.4	51.6	73.0	55.1
Total Country Stocks	**567.1**	**485.2**	**460.5**	**486.7**	**447.9**	**476.8**	**500.5**	**541.8**	**489.1**
of which:									
at Producers	403.4	342.3	295.0	325.2	303.5	329.9	360.5	389.9	349.9
at Merchants	31.5	25.6	18.0	25.3	22.3	17.6	41.0	16.0	12.7
at Consumers	132.2	117.3	147.5	136.2	122.1	129.3	99.0	135.9	126.5
Total Commercial Stocks	**585.7**	**530.5**	**501.4**	**567.4**	**521.6**	**646.7**	**970.2**	**1,448.5**	**1,723.4**
STRATEGIC STOCKPILES									
U.S.A.	340.6	340.6	340.6	341.0	341.0	341.0	341.0	325.9	303.3
Japan	-	-	-	-	-	-	-	-	-

Source: World Metal Statistics, published by World Bureau of Metal Statistics, recent issues.

a/ End of August 1994 .. not available

Annex V

International trade in zinc by type and by region, 1984-1993

(Thousand metric tons of metal content)

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993[a]
A. Zinc metal (including zinc alloys)										
World imports	2,292	2,311	2,349	2,431	2,491	2,369	2,374	2,286	2,595	2,868
Developed market economy countries	1,406	1,371	1,452	1,528	1,637	1,649	1,615	1,572	1,833	1,937
Developing countries	469	476	607	662	599	536	616	620	655	826
Countries of Eastern Europe	187	195	173	173	194	165	139	82	65	66
Socialist countries of Asia	230	269	117	68	62	19	4	12	42	40
World exports	2,246	2,274	2,147	2,300	2,410	2,352	2,176	2,237	2,667	2,917
Developed market economy countries	1,786	1,777	1,603	1,713	1,868	1,775	1,667	1,807	2,020	2,007
Developing countries	319	344	362	357	358	423	372	340	306	345
Countries of Eastern Europe	111	114	69	66	70	59	66	34	176	264
Socialist countries of Asia	30	39	113	164	114	95	71	56	165	301
B. Zinc ore										
World imports	2,236	2,304	2,499	2,480	2,448	2,408	2,964	2,660	3,554	2,964
Developed market economy countries	2,050	2,025	2,170	2,031	2,042	1,960	2,516	2,259	3,092	2,577
Developing countries	111	158	210	343	326	347	348	331	392	335
Countries of Eastern Europe	69	102	111	96	72	83	96	55	67	47
Socialist countries of Asia	6	19	8	10	8	18	4	15	4	4
World exports	2,476	2,262	2,254	2,478	2,701	2,654	3,398	3,015	3,340	3,028
Developed market economy countries	1,696	1,470	1,523	1,672	1,916	1,801	2,443	2,147	2,394	2,080
Developing countries	742	753	718	781	729	793	891	815	864	842
Countries of Eastern Europe	13	14	7	4	1	2	26	15	49	48
Socialist countries of Asia	25	25	6	21	55	58	38	38	33	59

Source: UNCTAD Commodities Division

[a] Provisional estimates

Annex VI

Zinc prices and base metal nominal price indices
1980-1994

(1980 = 100)

Year	Zinc prices (US dollar per metric ton)	Price indices					
		Zinc	Copper	Nickel	Tin	Lead	Minerals and metals
1980	762	100	100	100	100	100	100
1981	846	111	80	91	84	80	84
1982	745	98	68	74	76	60	73
1983	765	100	73	71	77	47	78
1984	896	118	63	73	73	49	73
1985	756	99	65	75	71	43	69
1986	712	93	63	60	34	45	66
1987	799	105	82	75	41	66	78
1988	1250	164	120	211	43	72	114
1989	1713	225	131	204	52	74	114
1990	1519	199	122	136	37	89	103
1991	1118	147	108	125	33	62	94
1992	1240	163	105	107	36	60	90
1993	964	126	88	81	30	45	77
1994a/	958	125	128	89	32	53	79

Source: UNCTAD Monthly commodity price bulletin (based on London Metal Exchange prices).

a/ On the basis of first six months.

1. Between 1979 and 1992, the world economy grew by only 2.2 per cent per annum compared to 4.2 per cent per annum in the 1970s.

2. No separate estimates of zinc consumption were available for the Russian Federation at the time of writing.

3. The importance of transportation and construction as major consuming industries of zinc can be visualized taking the North American market as an example. These two industries absorb more than 86 per cent of galvanized products, which account for more than 50 per cent of zinc consumption in the United States. There are other products such as zinc alloys that are also widely used in transportation and construction which make economic activity in these industries a major determinant of zinc consumption (See "Quality drives North America galv investments", Metal Bulletin Monthly, December 1993.

4. See "Low costs, integration needed for Pb-Zn", Metal Bulletin, 15 November 1993, page 12.